PM2.5 Implementation Rule Requirements: Reasonably Available Control Measures July 19, 2011

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Overview

1. PM2.5 Rule Statutory Requirements
2. Key Elements of PM2.5 Rule
3. Pollutants To Address in Attainment Plan
4. Reasonably Available Control Measure (RACM)
5. Reasonably Available Control Technology (RACT)
6. Reasonable Further Progress (RFP)
7. Contingency Measures
8. Resources

PM2.5 Rule Statutory Requirements

1. CAA Section 172 (subpart 1) nonattainment provisions: SIP must include demonstration that State "has adopted all RACM (including RACT) necessary to demonstrate attainment as expeditiously as practicable and to meet any RFP requirements."
   - Sufficient documentation to support analysis
   - SIP shall include list of measures considered
   - No specific threshold for size of source

2. The analysis needs to demonstrate that there are no additional technically and economically feasible measures that would enable the area to attain at least one year earlier.
   - Guiding principle for analysis must show that RACM/RACT does not exclude any group of reasonable controls including controls on smaller sources.

Key Elements : Preamble II.F.2

- RACT is part of RACM - not an independent requirement
- Tailor strategies to the unique problems of the area
- Analysis must show that all RACT and RACM have been adopted as enforceable regulations
- More comprehensive analysis needed if not attaining by 2014
- Must consider controls identified in public comments
- Level of documentation depends on attainment date
- Consider measures that provide multipollutant co-benefits

Pollutants

- Direct PM2.5 and SO2: Must be evaluated for control measures in each area
- PM2.5 emission limits and inventories need to include condensables
- NOx: Must be evaluated for control measures in each area unless a technical demonstration shows NOx emissions do not significantly contribute
- VOC & Ammonia: Not required to be evaluated for control measures unless a technical demonstration showing that emissions significantly contribute

Condensables: Preamble II.F.11

- Emission inventories have been required to include condensable PM for many years
- PM2.5 rule provided for a transition period which ended on Jan 1, 2011
- SIPs to include controls on condensables with enforceable limits if needed to show attainment or RFP
- Final test method rule was effective on January I, 2011

RACM

- RACT is a type of RACM specifically for stationary sources
- Area source measures: commercial cooking, reducing solvents
- Residential wood combustion/changeouts
- Open burning restrictions
- Transportation control measures
- Diesel retrofits/idling
- Innovative approaches: energy efficiency & renewables
  www.epa.gov/ttn/airinnovations/measure_specific.html

Technical Feasibility: Preamble II.F.4

- Consider factors such as:
  - Process and operating conditions
  - Raw materials
  - Physical plant layout
  - Non-air quality and energy impacts
  - Time needed to install and operate controls

Economic Feasibility: Preamble II.F.5

- Consider costs, $/ton, and economic effects
- No fixed $/ton
- Is the cost of the potential measure reasonable for the regulated entity to bear
- $/ton level for previous measures is an indicator of reasonableness but may differ across categories
- Generally assumed reasonable if sources in same category have implemented the control measure

Economic Feasibility cont'd

- Economic analysis necessary if source can't afford technology that is RACT for another area
- If severe impacts on local economy (shutdown, severe curtailment) economic analysis needed to support
- Feasibility may depend on availability of public funding i.e. mobile sources or transportation measures
- Economic Resource Manual http://www.epa.gov/ttn/ecas/analguid.html
- EPA Air Pollution Control Cost Manual (EPA 452/B-02-001)
- http://www.epa.gov/ttn/ecas/cost.htm

RACT for Stationary Sources

- Improve monitoring and performance of existing controls for fine particles: identify and mitigate malfunctions
- Upgrade control devices: is device undersized or increase capture rate
- Recent or upcoming actions
  - Refineries: recent measures in settlements, FCC units, SRU and process heaters
  - cement kilns, industrial boiler MACT, utility toxics rules
- Consider year-round NOx controls/low NOx burners/SCR
- Stationary diesel retrofits: oxidation catalyst/diesel particulate filter

RACT cont'd

- Improved monitoring
- Add conditioning agents
- ESP upgrades: wet ESP, gas conditioning, modernize electrical controls
- Advanced controls: polishing baghouse/bag leak detectors/advanced hybrid filter (ESP&FF)
- Increase scrubber pressure drop
- Reduce temperature to aid in collection of condensables

RACT for Sources With Previous RACT: Preamble II.F.10

- State must assure that RACT is met, either through
  - New RACT determinations if pollutant not addressed or the conclusion was no control
  - Certification that previously required RACT controls represent RACT today
- Previous BACT/LAER/MACT
  - Not automatically RACT – must provide reasoning why it is RACT

Certification

- If State adopted and EPA approved RACT control measure for a specific source then may be able to certify that as part of SIP revision
- States “are to consider new information” for previous RACT determinations
- Need to include appropriate supporting information
- Must have public notice and comment

Supporting Documentation

- Rule provides basic guidance on potential analyses for technical demonstration
- List of all emissions categories, sources and activities
- For each pollutant an inventory of emissions and list of technologically feasible controls
- Should provide: control efficiency, emission reduction, estimated cost per ton, date of implementation

RFP

- RFP plan is due with attainment demonstration in December 2012 if not able to attain the PM2.5 NAAQS by 2014
- Annual incremental reductions in emissions for purpose of ensuring timely attainment
- If State proposing attainment date beyond 5 years then must establish emission reduction milestones for 2014 (and 2017 if applicable) showing “generally linear progress” from the base year through the attainment year
- Base year for RFP inventory should be the same as for attainment demonstration

RFP cont'd

- Mid-course review due in 2016 for areas with attainment date in 2019 or 2020
- Evaluate progress in terms of emission reductions, ambient air quality and implementation of measures
- Identify and adopt new measures

Contingency Measures

- Measures to be implemented without further action if area fails by its attainment date or to meet RFP requirements
- Need to be measures other than those required for attainment or to meet RFP
- Level of reductions must be equal to one year's worth of reductions needed to show attainment for the area
- For example if base year is 2008 and attainment year is 2014 then contingency measures should be equal to one-sixth of reductions by pollutant needed to show attainment, or provide for one-sixth of air quality improvement needed for attainment

Resources

- EPA website: http:www.epa.gov/pm/measures.html
- NESCAUM reports: ICI boilers Jan. 2009); EGU boilers (Mar. 2011) http://www.nescaum.org/topics/air-pollution-control-technologies
- STAPPA/ALAPCO 2006 PM2.5 menu of options
- LADCO White Papers: http://www.ladco.org/RegionalAirQuality.html
- South Coast: Appendix A www.aqmd.gov/aqmp
- Pechan/RTI report: Evaluation of Potential PM2.5 Reductions by Improving Performance of Control Devices: Conclusions and Recommendations

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